

# 4D High-Resolution Offshore Seismic

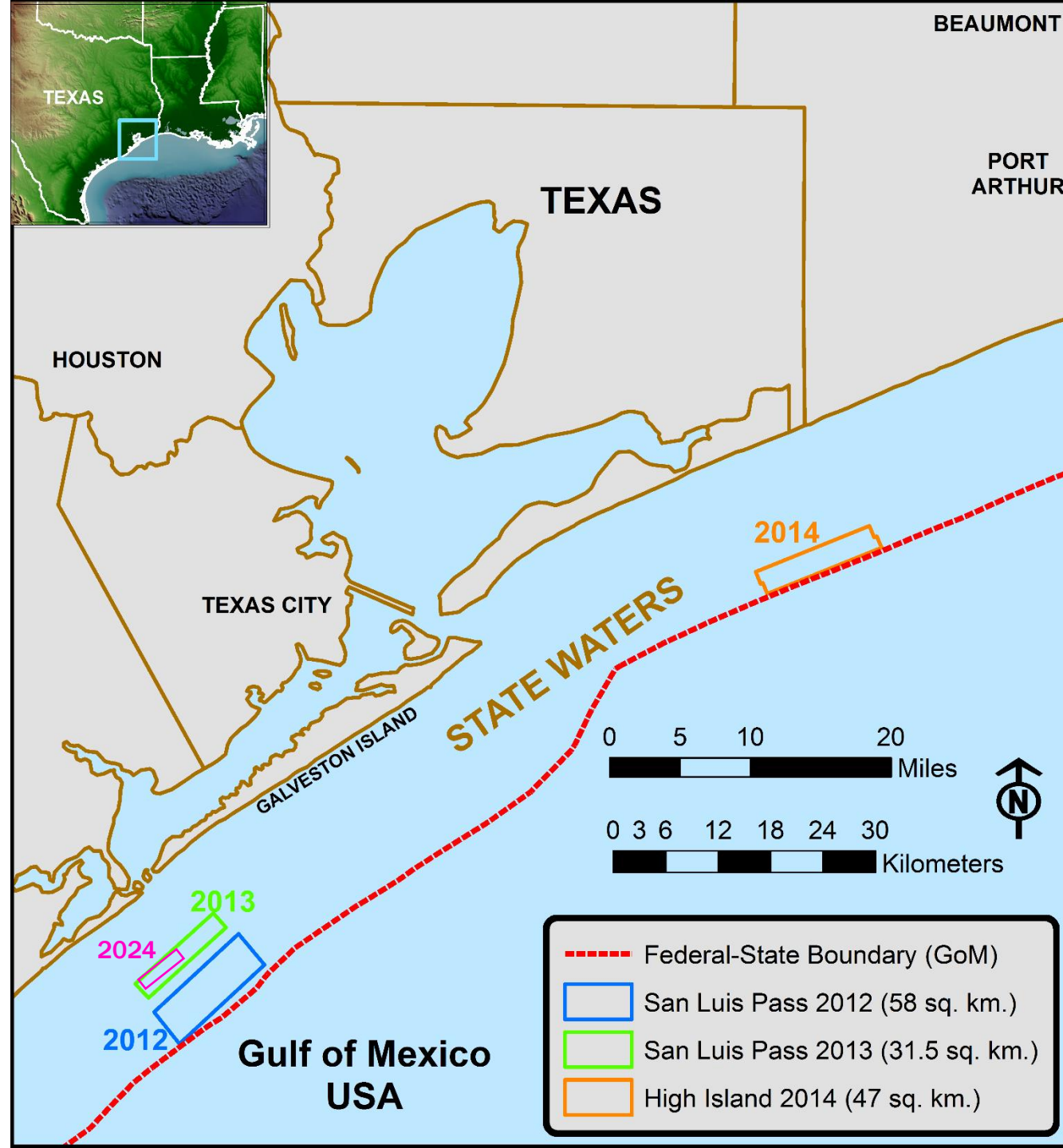
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**Ramon Trevino**

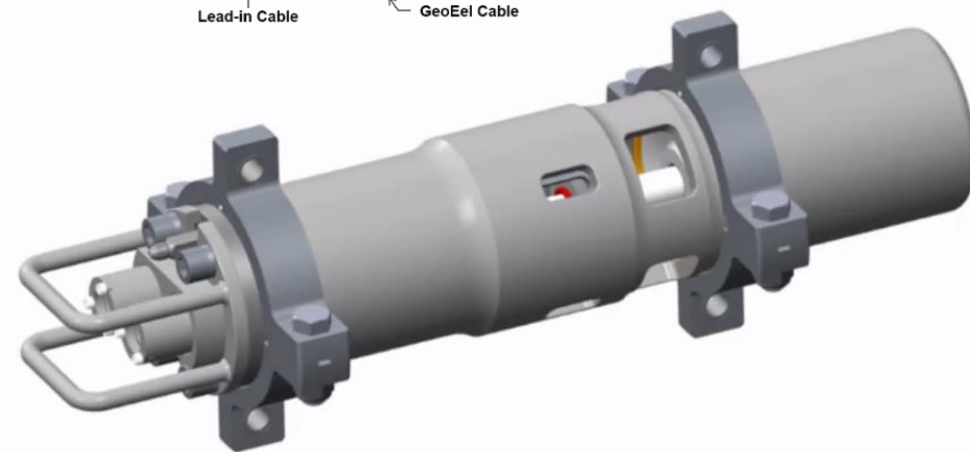
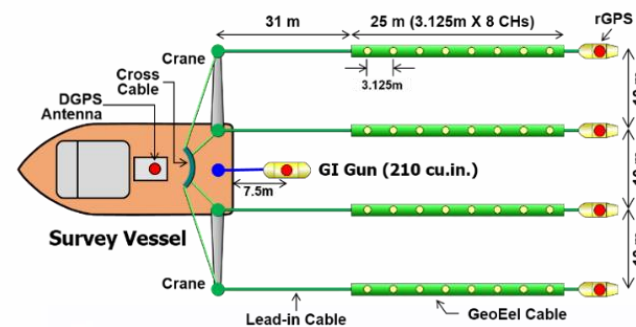
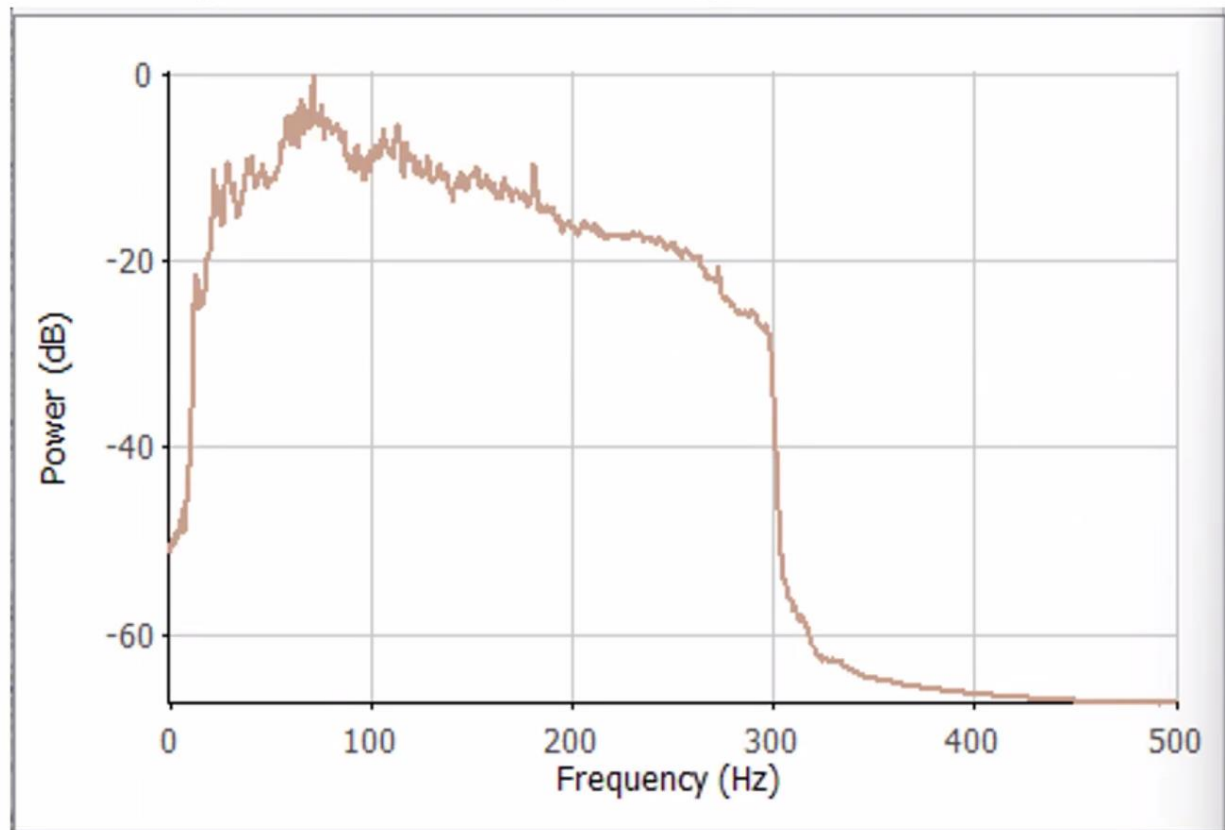


**GCCC Sponsors' Meeting**  
**June 21, 2024**  
**Spring, TX**



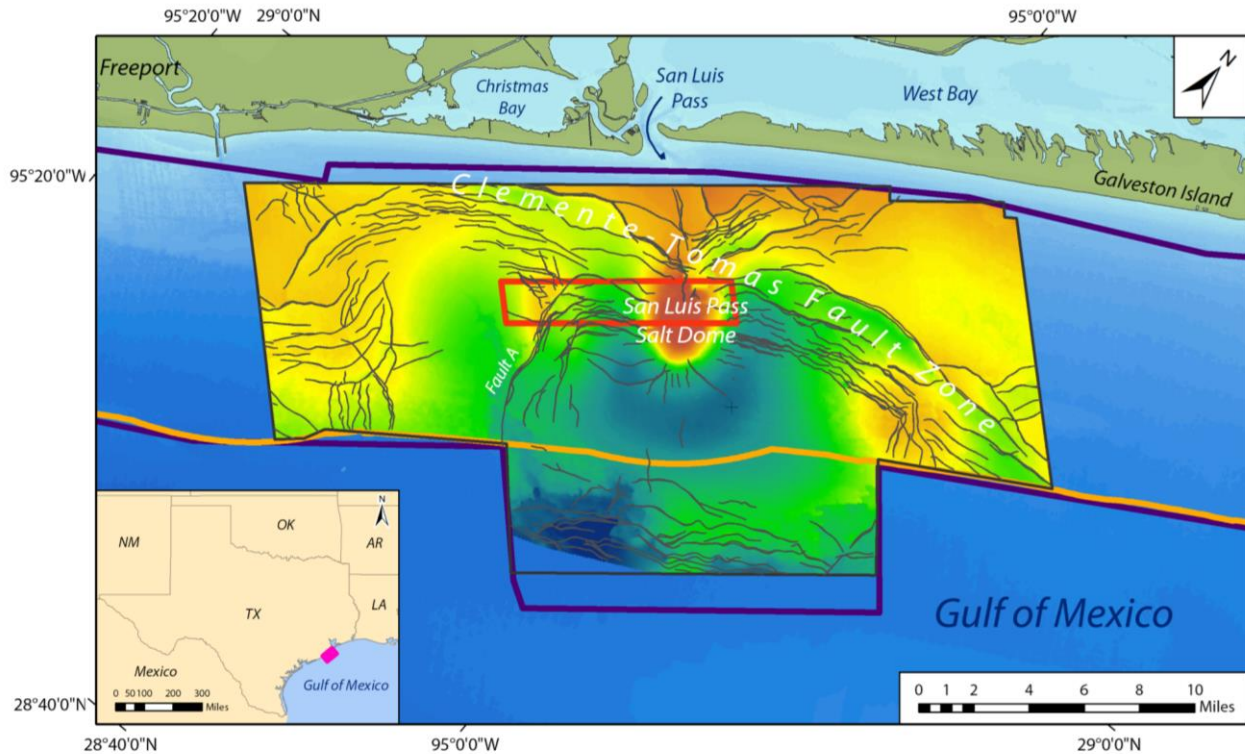
# Sercel 210 in<sup>3</sup> GI Gun Performance – 2024 San Luis Project

## Amplitude – Frequency Bandwidth



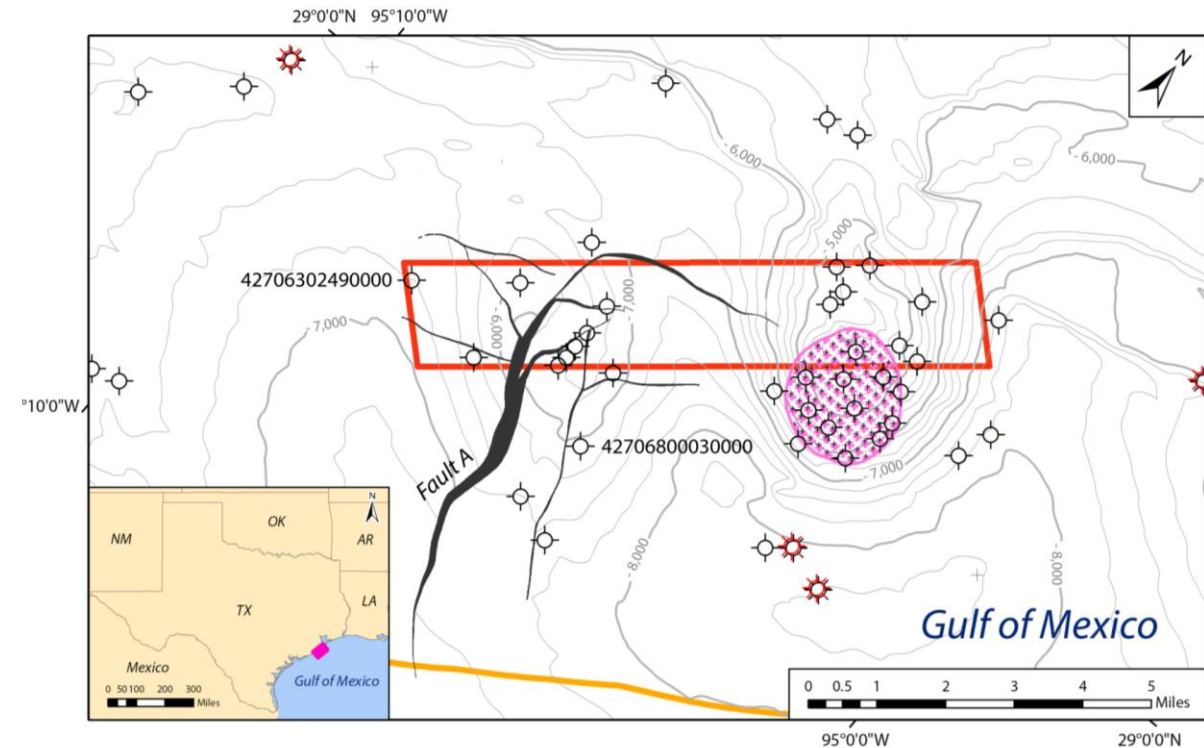
**Sercel 210 in<sup>3</sup> GI Gun**

# 2013 HR3D offshore Galveston



## Key to Features and Symbols

- Map Location
- SEI Conventional OBS 3-D Seismic Data
- Depth Converted OBS 3-D Seismic Data
- 2013 GCCC P-Cable 3-D Seismic Data
- Texas State Waters Boundary
- Faults
- Top of *Amph. B* Interval (ft TVDSS)
- 3,707

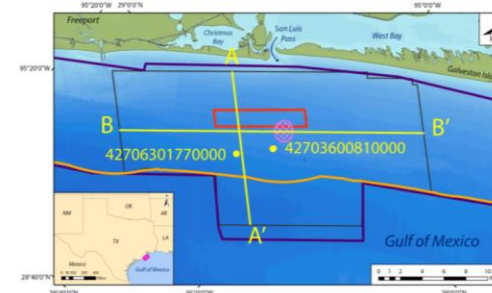
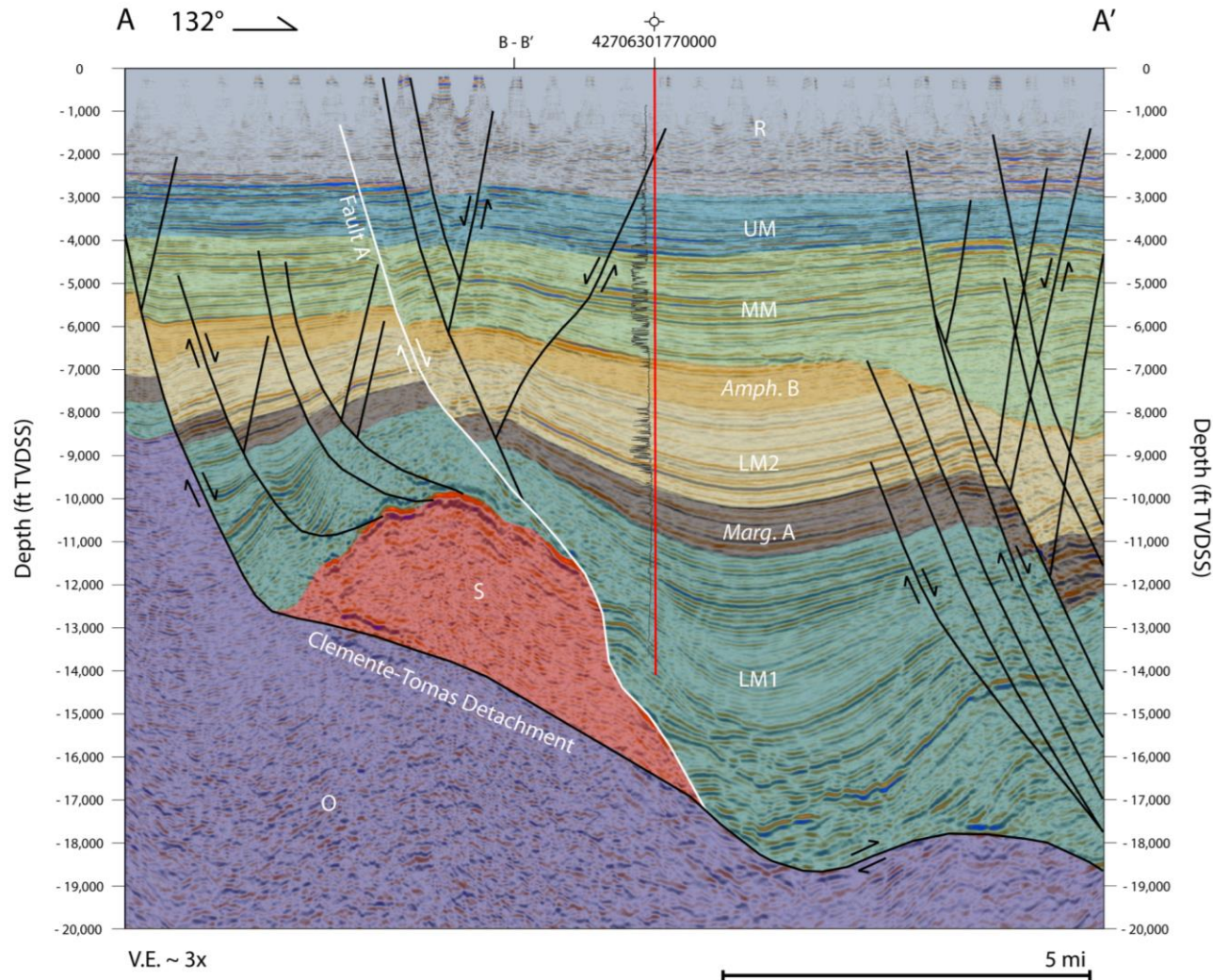


## Key to Features and Symbols

- Map Location
- 2013 GCCC P-Cable 3-D Seismic Data
- Texas State Waters Boundary
- Top LM2 Structure Contour  
C.I. = 250 ft TVDSS
- Fault Polygons
- San Luis Pass Salt Dome
- Dry Well
- \*
 Gas Well



# 2013 HR3D offshore Galveston



## Key to Geologic Features and Symbols

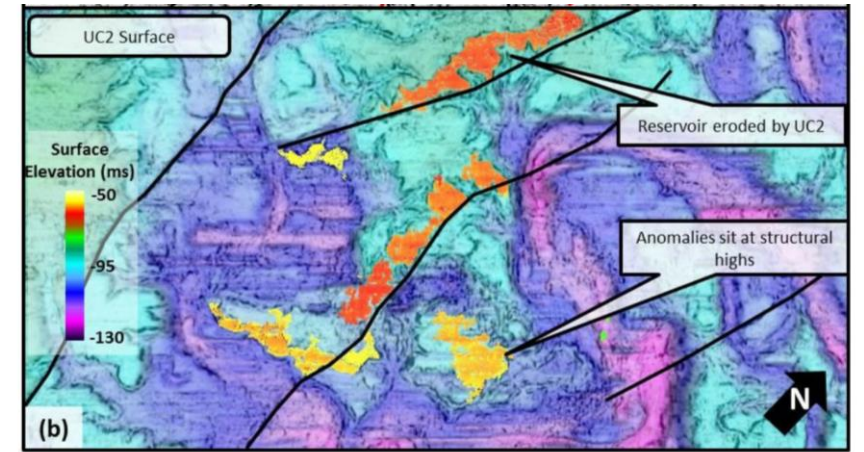
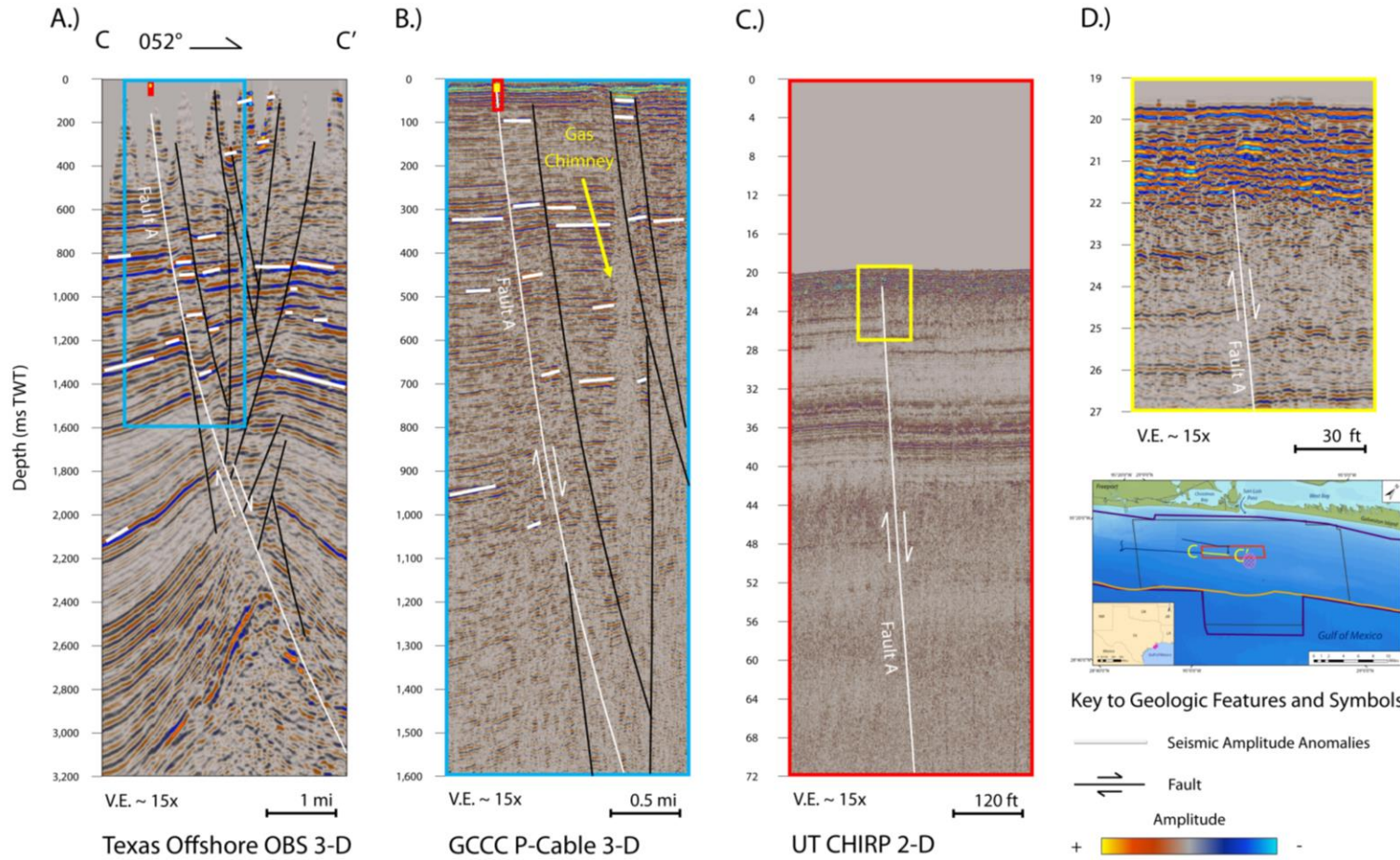
- R Recent through Pliocene Siliciclastics
  - UM Upper Miocene Siliciclastics
  - MM Middle Miocene Siliciclastics
  - Amph. B *Amphestegina chipolensis* Shale
  - LM2 Lower Miocene 2 Siliciclastics
  - Marg. A *Marginulina ascensionensis* Shale
  - LM1 Lower Miocene 1 Siliciclastics
  - O Oligocene Anahuac Shale and Older
  - S Jurassic Allochthonous Louann Salt
  - Faults
- OBS Amplitude  SP Log

V.E. ~ 3x

Texas Offshore OBS 3-D



# 2013 HR3D offshore Galveston

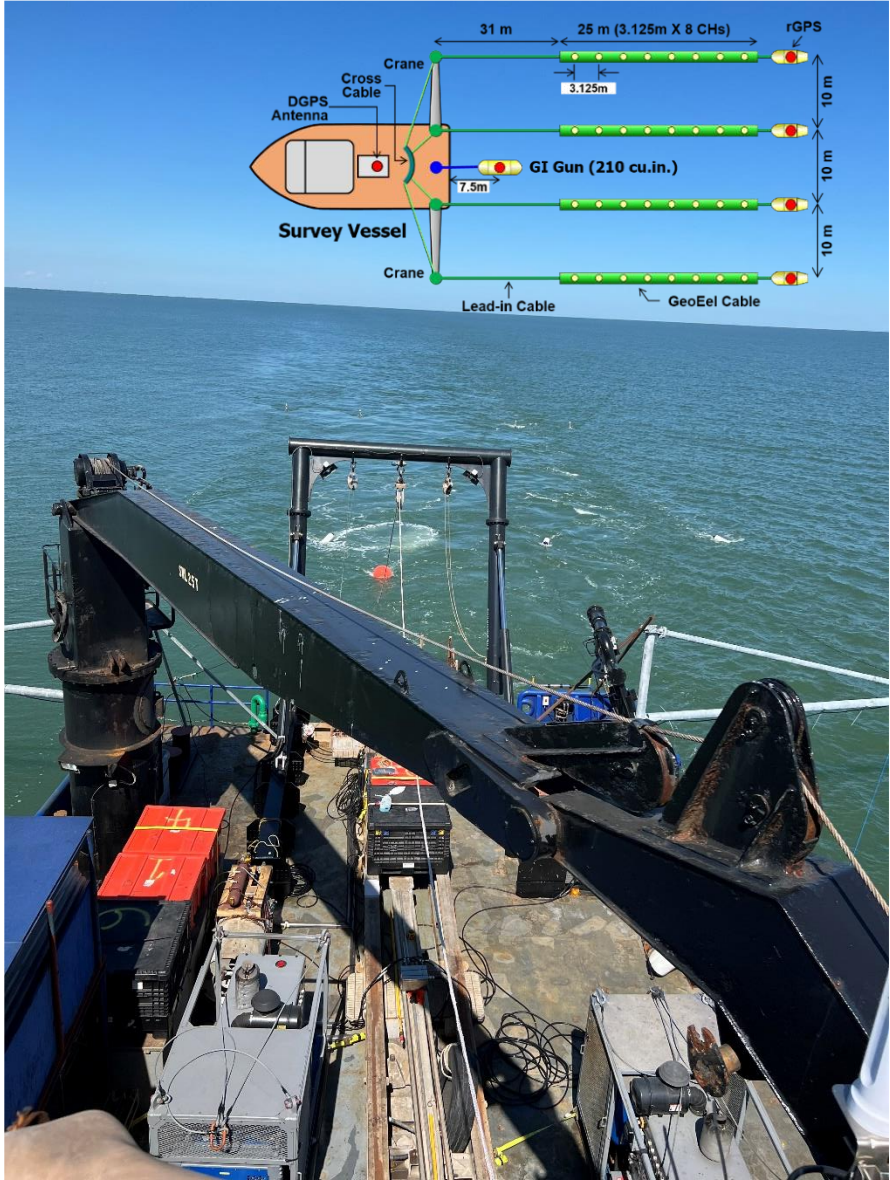


Mulcahy, 2015

Osmond, 2016

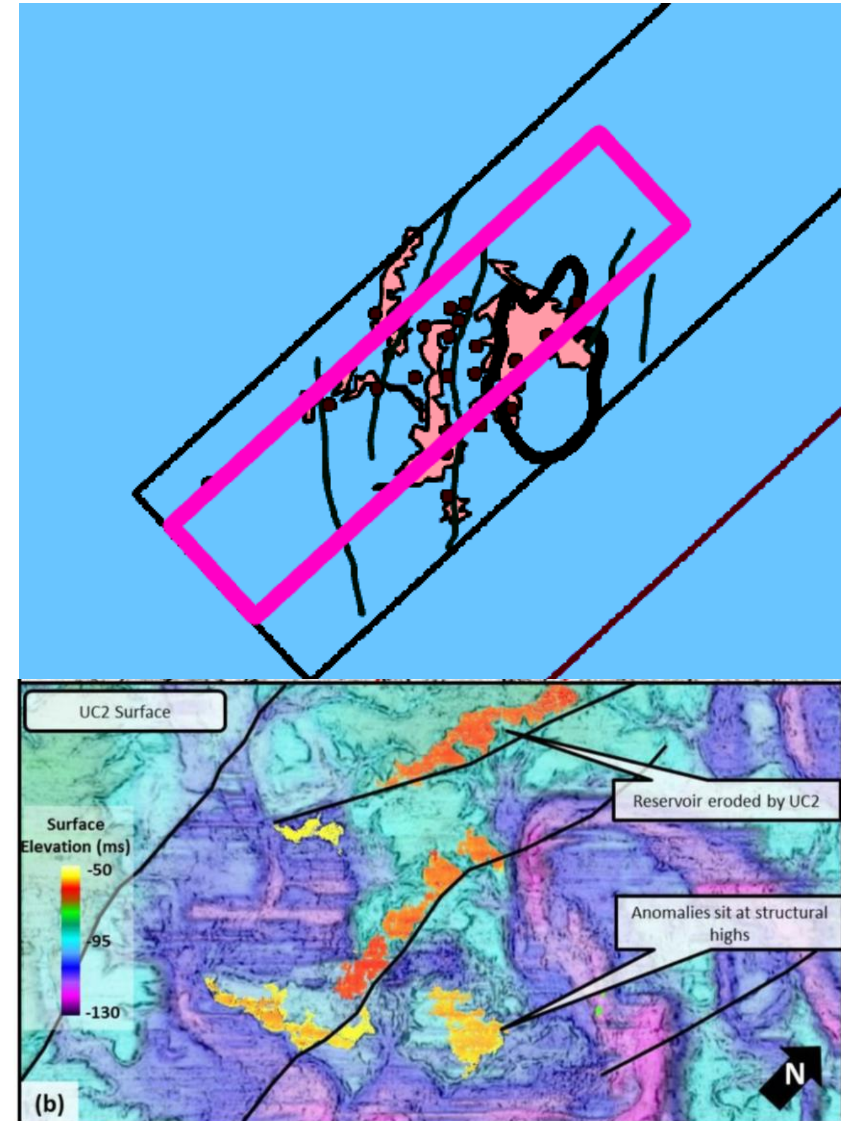
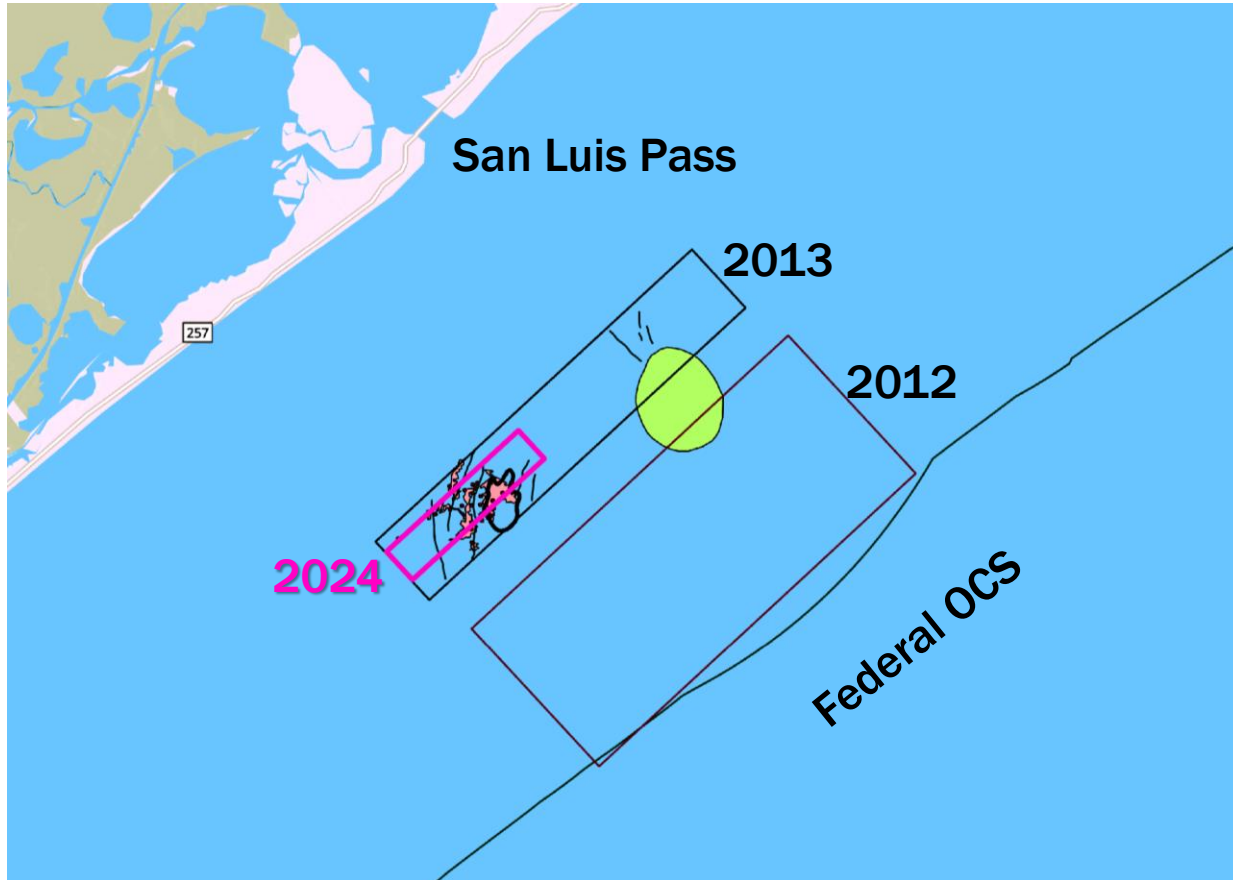


# 2024 HR4D offshore Galveston - \$400k





# 2024 HR4D offshore Galveston



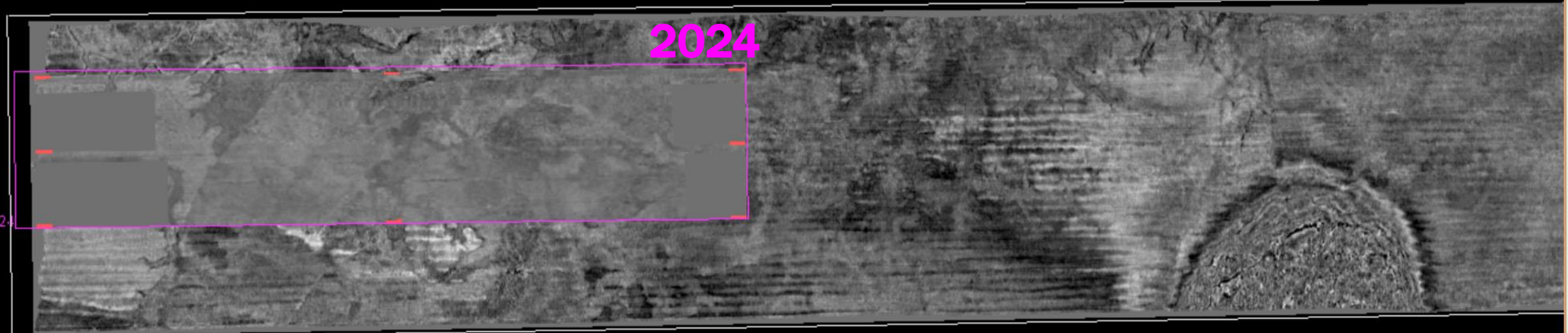
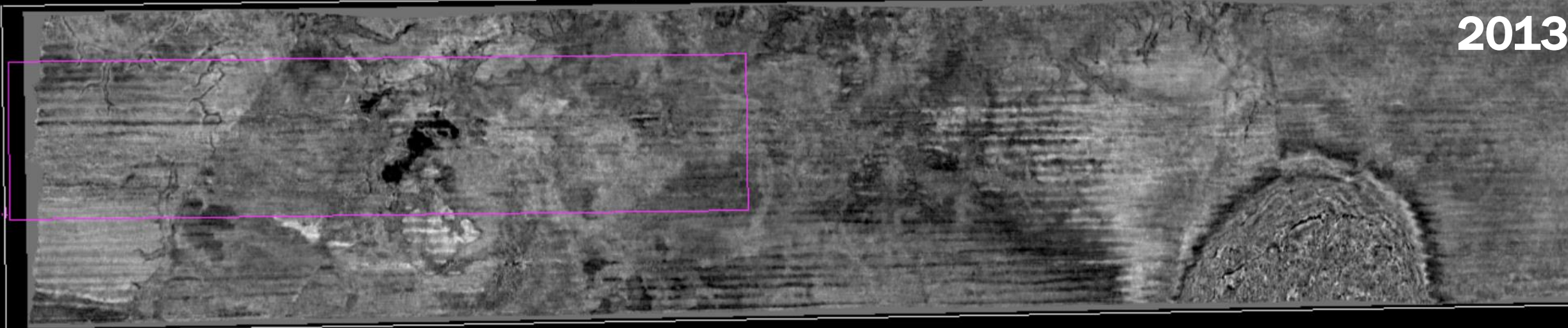


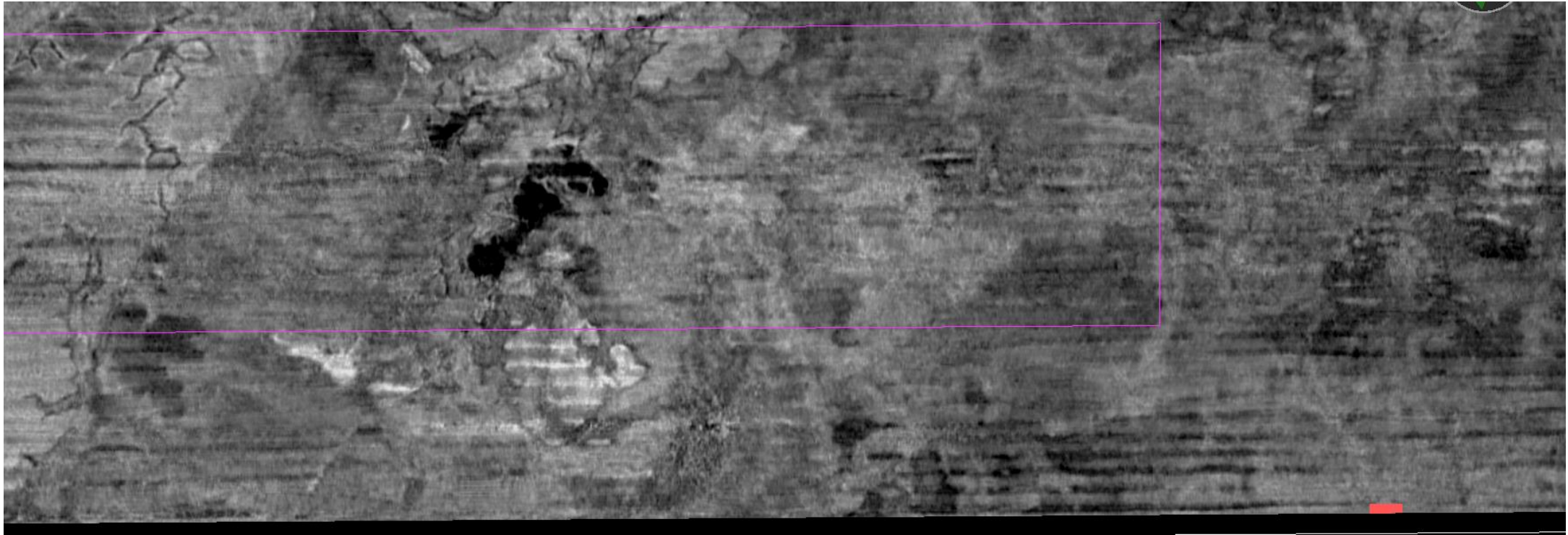
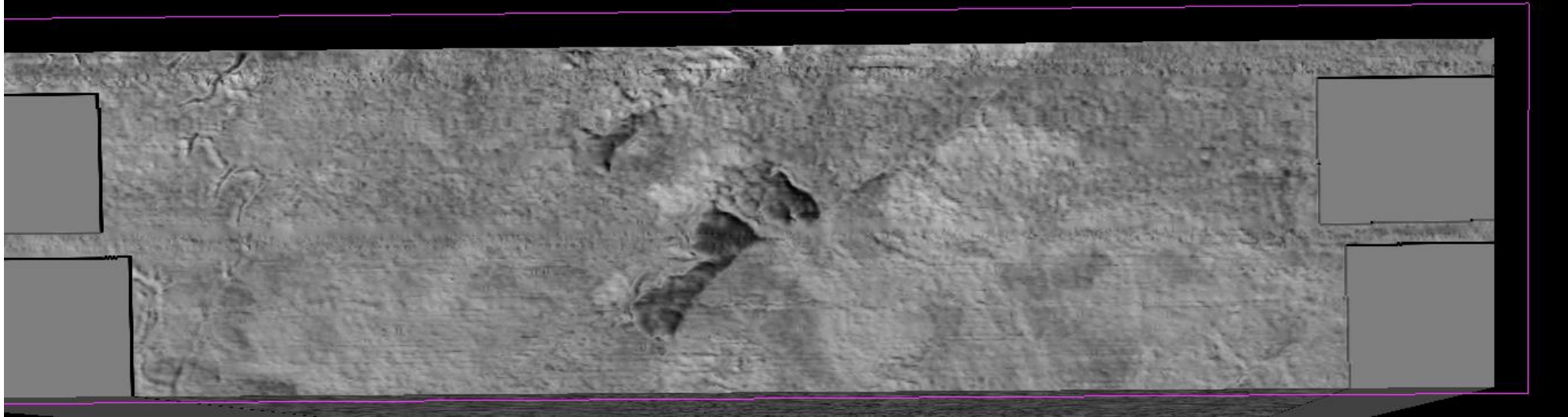
2013

SLP\_2024

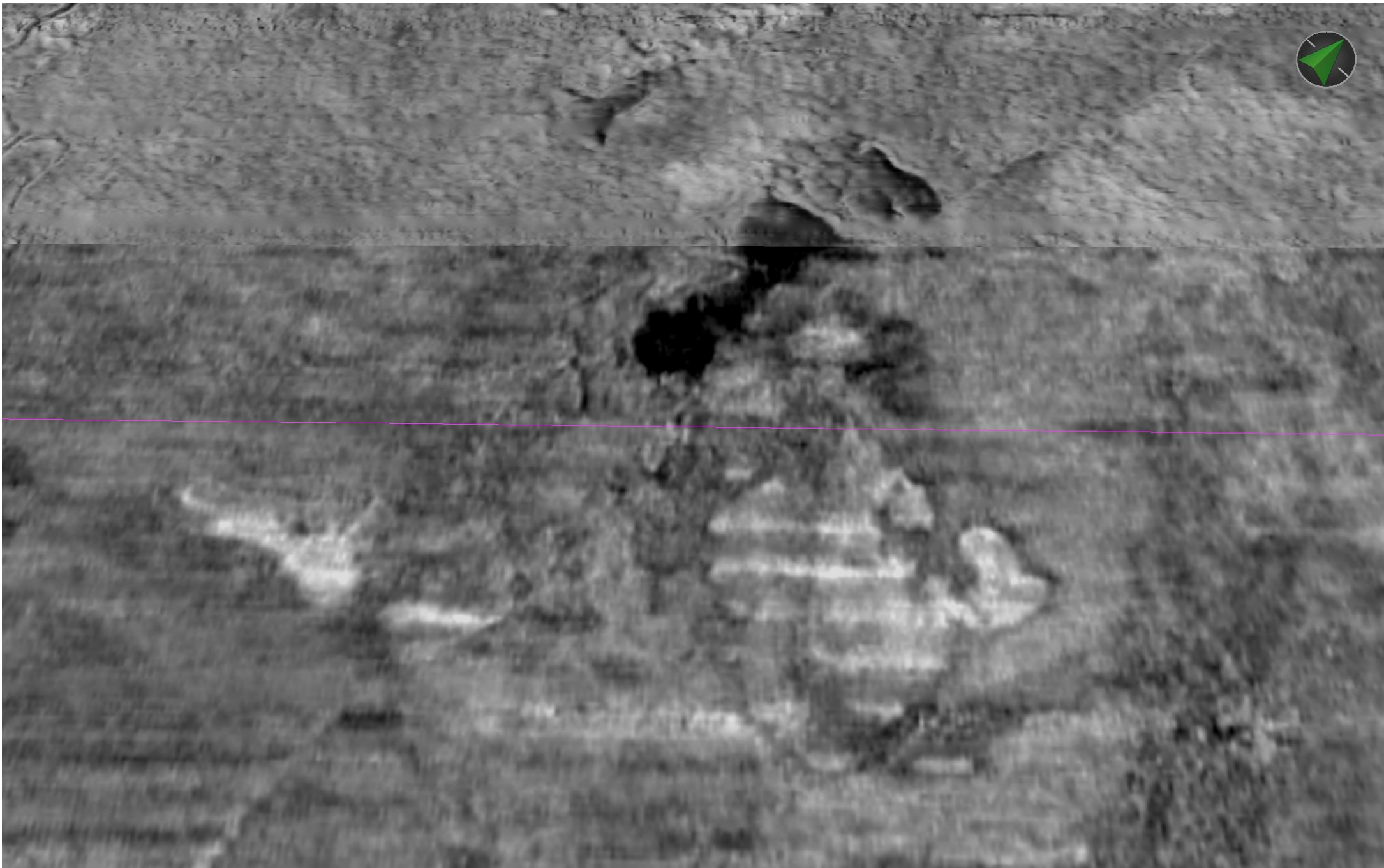
2024

SLP\_2024



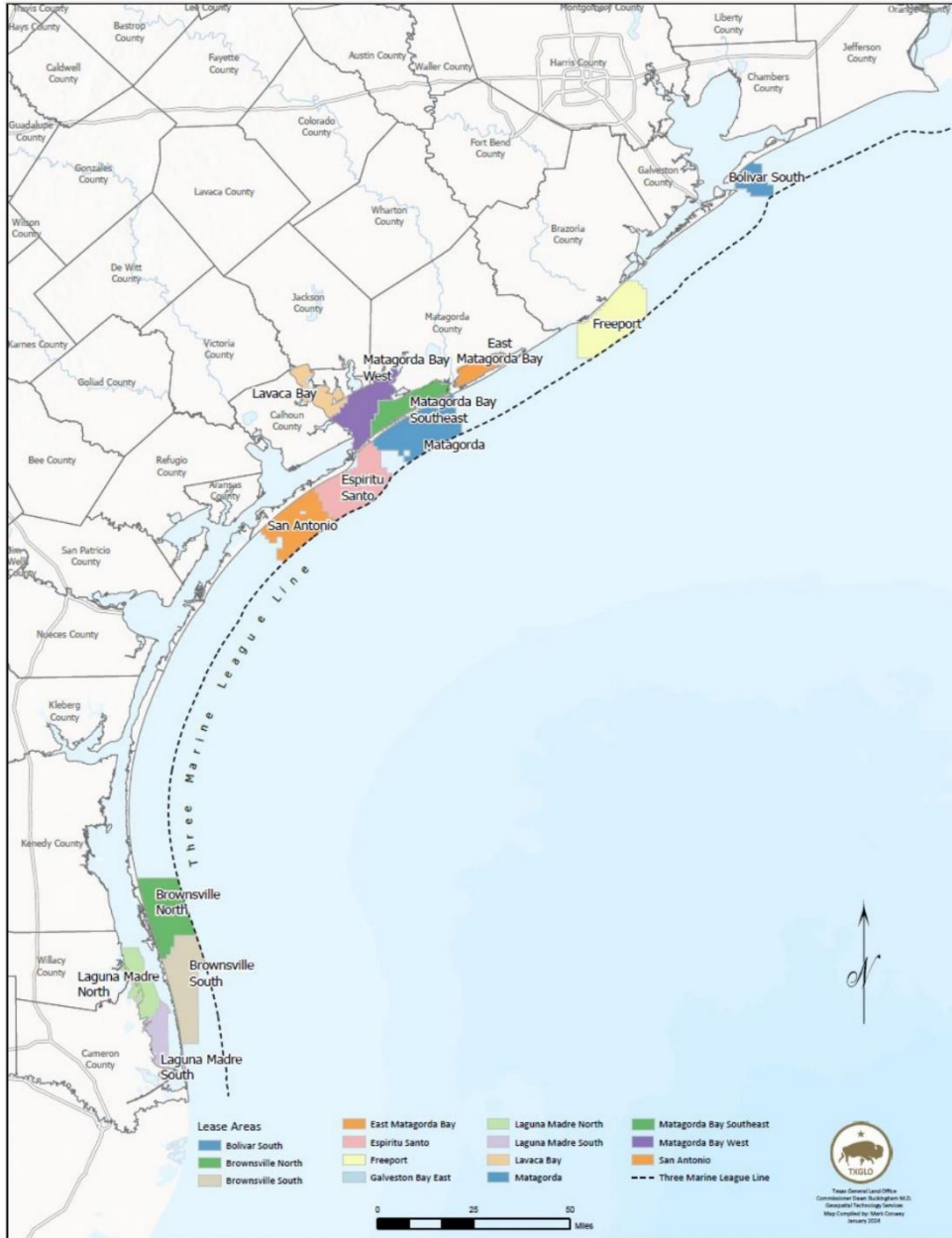






# GLO LEASE

- 14 Tracts
- 1.1 million acres
- 1,720 sq. mi.





# Conclusions

- **Successful 4D acquisition on shallow gas anomalies**
  - Site is an analog for CCS pre-injection characterization and 4D monitoring
  - Experience with EA, NEPA – FONSI for these types of surveys (Federal \$)
- **Full processing and 4D analysis to come...**
- **GoMCARB Project has \$1.2M for HR3D data – looking for a partner on existing lease in State or Federal waters.**

# Thank you!



BUREAU OF  
ECONOMIC  
GEOLOGY





# R/V PROTEUS VESSEL SPECIFICATIONS

## General

Name	R/V Proteus
Owner	TDI-Brooks International, Inc.
Built	Rysco Shipyard 20 July 1976
Port/Flag	Vanuatu, Port Vila
MMSI No.	577207000
Call Sign	YJTP5
IMO No	634290

Classification ABS A1, AMS, Ice Class C; Intl. Load Line

Statutory Certifications by Isthmus Bureau of Shipping  
SOLAS/MARPOL Classification Research Vessel, Cargo ship under 500 tons

## Dimensions

Length Overall	49.37m
Molded Breadth	11.58m
Depth to Main Deck (Molded)	3.96m
Max Speed	10 knots
Economical Speed	8 knots
Regulatory Tonnage	298 GRTM
Deadweight Tonnage	830 DWT
Max Draft	3.39m
Minimum Operational WD	4.5m

## Machinery

Main Engines	(2) – Cat D-398
Max Continuous Power	(2) x 634 kW each
Generators	1) – Cat 3406 , 210 kW; (1) Cat C-9, 175 kW

Standby Generator Leroy Somer Alemator 65KW

Standby Emergency Generator #2 John Deere – 165 kW, 440 v, 60 Hz used to power survey equipment, provide hotel service in port, or emergency power at sea as needed

Sewage Treatment Plant	Headhunter, TW HMX 524LP
Bilge Oil Water Separator	Model 1000 – OCD CM, 4.4 GPM
Fuel Purifier/Centrifuge	Alpha Laval

## Deck Machinery

A-frames	2 articulating, one port, one on stern
Crane	SBG, EHSC-80 knuckle boom, 5000 # SWL 6 M reach

## Capacities

Fuel	285 Cu M
Potable Water	72.6 Cu M
RO Watermaker	4.2 Cu M/day
FW Ballast	136.55 Cu M
Lube Oil	4.6 Cu M
Hydraulic Oil	4.6 Cu M
Slop Tank	2.06 Cu M
Used Oil	2.06 Cu M

## Voice/Data Communications

Primary Data	Bandwidth 128k down/64k to 10Mb down/3Mb up
Internet/Email	Custom access allowed ranging from Free to \$7250/mth, or \$/MB
Sat Comm	KVH V 7hts / Inmarsat Fleet Broadband Systems

Life Saving Equipment As per CS Safety Equipment Certificate

Type 1 PFD	200% of POB
Immersion Suits	100% of POB
Life Rafts	3 – 20 person each
SOLAS Rescue Boat and davitRHIB, w/25 hp gasoline OBM	

## Accommodations

Total Berthing (in)	40 - 9 marine crew, 31 supernumeraries
One person rooms	Four
Two person rooms	Nine
Four person rooms	Three
Six person rooms	One
Heads/Showers	10 ensuite; 2 shared public
Galley/Mess Seating	17 per seating
Laundry	One with 2 washers, 2 dryers
Lounge	One
Shop/Tool Room	One, main deck aft port side
Labs/Enclosed Work Spaces	Two; one main deck, one 02 deck

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www.tdi-bi.com



TDI-Brooks is a privately held Texas firm incorporated in 1996 and headquartered in College Station, with a remote domestic office located in Houston, TX and strategically placed offices around the globe. The company has international affiliates in Port Harcourt, Nigeria (TDI-Brooks Nigeria Ltd.) and Rio de Janeiro, Brazil (GSI-Brooks) with branch offices in Colombia (TDI-Brooks Sucursal Colombia) and Mexico.